

**What is claimed is:**

1. A method for producing 2-deoxy-L-ribose comprising the steps of

(A) protection step for preparation of 2-deoxy-1-O-alkyl-D-ribopyranoside, of  
5 which the aldehyde group in 2-deoxy-D-ribose is protected in the form of acetal, by  
reacting 2-deoxy-D-ribose with an alcohol in the presence of an acid;

(B) activation step for preparation of 2-deoxy-1-O-alkyl-3,4-di-(alkanesulfonyl)-  
D-ribose or 2-deoxy-1-O-alkyl-3,4-di-(arylsulfonyl)-D-ribose, of which the 3-and 4-  
OH groups in 2-deoxy-D-ribose are activated, by reacting the above 2-deoxy-1-O-  
10 alkyl-D-ribose and an organic sulfonyl halide in the presence of a base;

(C) inversion step for preparation of a mixture of 2-deoxy-1-O-alkyl-3-acyl-L-  
ribose and 2-deoxy-1-O-alkyl-4-acyl-L-ribose, in which the stereochemistry of 3-OH  
and 4-OH groups are inverted, by reacting the above 2-deoxy-1-O-alkyl-3,4-di-  
(alkanesulfonyl)-D-ribose or 2-deoxy-1-O-alkyl-3,4-di-(arylsulfonyl)-D-ribose with a  
15 metal salt of organic acid; and

(D) deprotection step for preparation for 2-deoxy-L-ribose by reactions of the  
above mixture of 2-deoxy-1-O-alkyl-3-acyl-L-ribose and 2-deoxy-1-O-alkyl-4-acyl-L-  
ribose with an acid and then with a base, or with a base and then with an acid.

20 2. The method for producing 2-deoxy-L-ribose according to Claim 1, wherein the  
alcohol used in said protection step is a lower alcohol having 1-4 of carbon number,  
benzyl alcohol or substituted benzyl alcohol.

3. The method for producing 2-deoxy-L-ribose according to Claim 1, wherein the

organic sulfonyl halide used in said activation step is a lower alkanesulfonyl halide such as methane sulfonyl chloride or trifluoromethyl chloride, or arylsulfonyl halide such as benzenesulfonyl chloride or p-toluenesulfonyl chloride.

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